ZIKA VIRUS DISEASE

1. **Agent:** Zika virus is a mosquito-borne Flavivirus.

2. **Identification:**

   a. **Symptoms**: Most common symptoms include fever, maculopapular rash (usually starts on the face and then spreads throughout the body), joint pain, or non-purulent conjunctivitis. Other symptoms include muscle pain and headache. The sickness is usually mild with symptoms lasting for several days to a week. Most of the infections remain asymptomatic (80%). Recovery is usually complete and fatalities are rare.

   b. **Differential Diagnosis:** The same type of mosquitos that transmit Zika virus also transmit dengue and chikungunya viruses. The symptoms that Zika virus presents are similar to those of dengue and chikungunya. Concurrent testing for chikungunya and dengue is recommended. Zika virus is closely related to dengue, yellow fever, Japanese encephalitis and West Nile virus.

   c. **Clinical Syndromes**: Zika virus infection identified in infants born with microcephaly (including deaths) and several other fetal losses. The risk of congenital infection and microcephaly in a pregnant woman who is infected with Zika virus is unknown. Guillain-Barré syndrome has been linked to patients following suspected Zika virus infection.

   d. **Diagnosis**:

      - Zika virus diagnosis is based on a combination of travel history, clinical signs and symptoms, vaccination history, history of flavivirus infection, and specialized laboratory tests of blood.

      - During the first week of illness, Zika virus disease can often be diagnosed by performing reverse transcriptase-polymerase chain reaction (RT-PCR) on serum.
        - Serology assays can also be used to detect Zika virus-specific IgM and neutralizing antibodies, which typically develop toward the end of the first week of illness.
        - A positive IgM result does not always indicate Zika virus infection and can be difficult to interpret because cross-reactivity can occur with related flaviviruses (e.g., dengue, Japanese encephalitis, West Nile, yellow fever).
        - A positive Zika virus IgM result may reflect previous vaccination against a flavivirus; previous infection with a related flavivirus; or current infection with a flavivirus, including Zika virus.
        - A convalescent serology specimen will frequently be needed to clarify indeterminant and for results that indicate co-infection or recent infection with dengue or chikungunya viruses.

      - Plaque-reduction neutralization testing (PRNT) are performed on those with positive IgM results to measure virus-specific neutralizing antibodies to confirm primary flavivirus infections and differentiate from other viral illnesses.
        - PRNT can be performed to measure virus-specific neutralizing antibodies to Zika virus, but neutralizing antibodies may still yield cross-reactive results in a person who was previously infected with another flavivirus, such as dengue, or has been vaccinated against yellow fever or Japanese encephalitis.

      - PCR of urine for Zika virus can be detected up to thirty days after onset of acute symptoms for suspected cases of acute Zika infection.

      - Zika virus testing for the assessment of risk for sexual transmission is of uncertain value, because current understanding of the duration and pattern of shedding of Zika virus in the male genitourinary tract is limited. Therefore, neither serum nor semen testing of men for the purpose of assessing risk for sexual transmission is currently recommended.

3. **Incubation**: Evidence from case reports and experience from related flavivirus infections indicate that the incubation period for Zika virus disease is likely 3–14 days.

4. **Reservoir**: Unknown

5. **Source**: Infected Aedes species mosquito (*A. aegypti (main vector)* and *A. albopictus is of concern because it has vector competence*.

6. **Transmission**:

   - Zika virus is spread to people primarily through the bite of an infected Aedes species mosquito *A. aegypti.* Zika virus has not been spread by mosquitos in the continental United States. However, lab tests have confirmed Zika virus in travelers returning to the United States. These travelers have gotten the virus from mosquito bites and a few non-travelers got Zika through sex with a traveler.

   - Mosquitos that spread Zika virus are aggressive daytime biters, prefer to bite people, and live indoors and outdoors near people. The mosquitoes that spread Zika virus also spread dengue and chikungunya viruses.

   - During the first week of infection, Zika virus can be found in the blood and passed from an infected person to a mosquito through mosquito bites. An infected mosquito can then spread the virus to other people.

   - Zika virus can be sexually transmitted by an infected man to his partners. Zika virus has been identified in semen and it is unknown how long the Zika virus is present in semen.

   - Zika virus can be passed from a pregnant woman to her fetus during pregnancy or at delivery.

7. **Communicability**:

   Zika virus usually remains in the blood of an infected person for about a week but it can rarely be found longer in some people. There is no evidence that the virus will cause infection in a pregnancy that occurs after the virus is cleared from the mother's blood. The virus can be present in semen longer than in blood.

   Currently, there is no evidence to suggest that past Zika virus infection poses a risk of birth defects for future pregnancies.

8. **Specific treatment**: There is no vaccine or medicine to treat Zika virus. Treat symptoms with supportive care that includes: bedrest, increased fluid intake, and acetaminophen (Tylenol®) to reduce fever. Aspirin or other non-steroidal anti-inflammatory drugs are not recommended until dengue can be ruled out to reduce the risk of hemorrhage.

9. **Immunity**: Once a person has been infected, they are likely to be protected from future infections.

REPORTING PROCEDURES

1. Report any case or suspected case within 7 calendar days (Title 17, Section 2500 and 2505. California Code of Regulations) to the Acute Communicable Disease Control Program at 213-240-7941.

2. **Report Form:**

- **ZIKA VIRUS TESTING AND REPORT FORM**
- **ZIKA CASE REPORT**
- **ZIKA CASE SUPPLEMENTAL FORM**
- **Zika Virus Positive Blood Donor Form to CDPH**
- **Zika Pregnancy Registry Forms:**

  a. Maternal Health History Form

  b.Neonate Assessment at Delivery Form

  c. Infant Health follow-up Form

3. Epidemiologic and Clinical Data:

a. Travel to Zika-affected areas (http://www.cdc.gov/zika/geo/active-countries.html) within 2 weeks prior to onset of symptoms.

b. Symptomatic non-pregnant traveler (male or female) with onset of 1 or more symptoms,

such as acute onset of fever (measured or reported), maculopapular rash, arthralgia, and conjunctivitis within 14 days of return from Zika-affected areas.

c. Symptomatic pregnant traveler to Zika-affected area with onset of symptoms within 14 days of return or onset during travel.

d. Asymptomatic pregnant traveler to Zika-affected area within 12 weeks after return from travel.

e. Pregnant traveler to Zika-affected area regardless of symptoms with ultrasound screening evidence of microcephaly (occipitofrontal circumference <3rd percentile for age and gender) and/or calcifications in fetus or fetal loss.

f. Symptomatic pregnant woman with NO travel to Zika-affected areas AND unprotected sex with a symptomatic male traveler.

g. Infant with microcephaly and/or calcifications and evidence of maternal Zika virus infection.

h. Infant with no apparent defect and evidence of maternal Zika virus infection.

i. Traveler to Zika-affected area with Guillain-Barré Syndrome diagnosis.

j. History of recent receipt of blood products or tissue transplantation.

k. CSTE case definition (https://wwwn.cdc.gov/nndss/conditions/zika-virus-disease-and-zika-virus-congenital-infection/case-definition/2016/)

CONTROL OF CASE, CONTACTS & CARRIERS

1. ACDC will review suspect reports and cases.

2. Case investigation to be completed by ACDC staff.

3. Investigation should be initiated within 7 days.

CASE: Recommend symptomatic cases stay in air-conditioned/screened locations and use personal precautions for at least 1 week to reduce mosquito bites.

1. Pregnant females will be entered into a **US Zika Pregnancy Registry.**

2. ACDC/Office of Reproductive Health Program(MCAH)/Maternal, Child and Adolescent Health (MCAH) Program will monitor pregnant female throughout pregnancy and the infant after delivery up to 1 year post delivery.

3. Once local transmission is confirmed, intensify surveillance for human cases in a 150-yard radius (or other boundary, as deemed appropriate) around home or other likely sites of exposure. Consider conducting household and door-to-door surveillance for clinically compatible cases.

CONTACTS:

Couples in which a man had confirmed Zika virus infection or clinical illness consistent with Zika virus disease should consider using condoms or abstaining from sex for at least 6 months after onset of illness.

A pregnant woman with possible sexual exposure to Zika virus should be tested if either she or her male partner developed symptoms consistent with Zika virus disease.

CARRIERS: Not applicable

PREVENTION-EDUCATION

- There is no vaccine to prevent Zika virus disease. The best way to prevent disease spread by mosquitos is to avoid being bitten.

- Anyone who is living in or traveling to an area where Zika virus is found who has not already been infected with Zika virus is at risk for infection, including pregnant women.

- Because of the association between Zika infection and microcephaly, pregnant women should strictly follow steps to prevent mosquito bites.

- Pregnant women are advised not to travel to areas with active Zika virus transmission and to consistently and correctly use condoms during sex (i.e., vaginal intercourse, anal

intercourse, or fellatio) or to abstain from sex for the duration of the pregnancy with male partners who reside in or have traveled to areas with active Zika virus transmission.

- Pregnant women who live in or must travel to one of these areas should talk to their health care provider and strictly follow steps to prevent Zika virus infection acquisition from mosquito bites.

- Men who have pregnant partners and travel to Zika virus endemic countries should abstain from sexual intercourse or use condoms correctly for the duration of the pregnancy.

- Couples in which a man traveled to an area with active Zika virus transmission but did not develop symptoms of Zika virus disease should consider using condoms or abstaining from sex for at least 8 weeks after departure from the area.

- Women trying to get pregnant: Consult healthcare provider before they or their male partner travel about their plans to become pregnant and the risk of Zika virus infection.

- Women with Zika virus disease should wait until at least 8 weeks after symptom onset before attempting conception.

- Men who have had a diagnosis of Zika virus disease should wait at least 6 months after symptom onset before attempting conception.

- Returning travelers from Zika endemic areas should not donate blood or blood products until 8 weeks after departure from the area.

- Returning travelers from Zika endemic areas should not donate organs, semen or eggs until 6 months after departure from the area.

When traveling to areas with Zika and other diseases spread by mosquitos, take the following steps:

- Wear long-sleeved shirts and long pants.
- Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside.
- Sleep under a mosquito bed net if overseas or outside and not able to protect self from mosquito bites.
- Use Environmental Protection Agency (EPA)-registered insect repellents. When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breast-feeding women.
- Treat clothing and gear with permethrin or purchase permethrin-treated items.
- Treated clothing remains protective after multiple washings. See product information to learn how long the protection will last.
- If treating items yourself, follow the product instructions carefully.
- Do NOT use permethrin products directly on skin. They are intended to treat clothing.

Travelers returning from areas with Zika transmission should take precautions upon return (actively take steps to prevent mosquito bites for at least three weeks) to reduce the risk of spread to local mosquito populations.

Reduce the likelihood of transmission from mosquitoes, including: reduce habitat/potential breeding sites, initiate community clean-up efforts, initiate public information campaigns encouraging yard clean up, use of insecticides, encourage placement of window screens, etc.

DIAGNOSTIC PROCEDURES

Download the **Zika Virus Testing Report Form** and submit the completed form as instructed. Directions for specimen collection and shipping are provided on the form. **NOTE: Specimens will not be tested if this form is incomplete or if it does not accompany the specimen(s).**

Requests for testing specimens of amniotic fluid, placenta, cord blood, and/or tissue from a fetus or newborn with microcephaly or intracranial calcifications should be made by phone to ACDC. For laboratory consultation regarding Zika virus specimen types and collection,
Contact the Public Health Laboratory:

- Weekdays during business hours (8:00-5:00) call 562-658-1300
- After hours call 213-974-1234. Ask for the Public Health Laboratory Director.